

Date: Fri, 6 Aug 93 04:30:11 PDT
From: Ham-Ant Mailing List and Newsgroup <ham-ant@ucsd.edu>
Errors-To: Ham-Ant-Errors@UCSD.Edu
Reply-To: Ham-Ant@UCSD.Edu
Precedence: Bulk
Subject: Ham-Ant Digest V93 #3
To: Ham-Ant

Ham-Ant Digest Fri, 6 Aug 93 Volume 93 : Issue 3

Today's Topics:

 Cushcraft AR270 Opinions ?
 hombuilding a discone antenna for scanner
 Newbie Scanner Antenna Questions (3 msgs)
 Question about Diamond X500HNA assembly
 Some Fundamental Antenna Questions

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Problems you can't solve otherwise to brian@ucsd.edu.

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(by FTP only) from UCSD.Edu in directory "mailarchives/ham-ant".

We trust that readers are intelligent enough to realize that all text
herein consists of personal comments and does not represent the official
policies or positions of any party. Your mileage may vary. So there.

Date: 5 Aug 93 16:17:04 GMT
From: ogicse!hp-cv!hp-pcd!hpcvsnz!davidc@network.ucsd.edu
Subject: Cushcraft AR270 Opinions ?
To: ham-ant@ucsd.edu

I am considering purchasing a Cushcraft AR270 vertical 2m/70cm antenna. Does
anyone have some opinions on this antenna that they would like to share with
me? I'd like to hear them.

Thanks.

Dave Cook, KB7QCL

Date: Thu, 5 Aug 1993 14:40:03 GMT
From: aio!pat!weed@ames.arpa
Subject: hombuilding a discone antenna for scanner

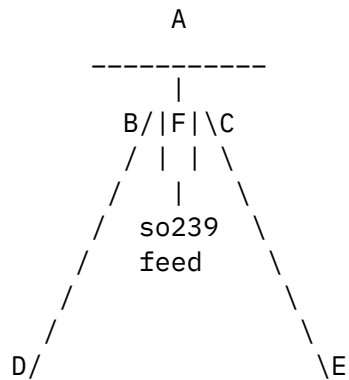
To: ham-ant@ucsd.edu

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I plan on home-building a discone antenna for my scanner. Having blown all my extra cash on the scanner, I can't afford the 60-90 dollars for a factory antenna. I plan to put the antenna in my attic, so I'm not so concerned with weather durability.

I understand the basic dimensions, but I need help on the following:

- * How critical is getting the disk lined up with the apex of the cone?
- * I plan to use the so-259 chassis mount connector from RS, but how do I connect the ground to the cone and the center to the disk? In other words, how do I connect everything at point F:



- * How does the antenna maintain its structural integrity? Do I need to build a wood frame to hold it all together? How critical is it that the cone be perfectly round?
- * I plan to use 1/2 inch galvanized screen for both the cone and the disk since I have some lying around. Is this acceptable?

Thanks in advance for your help,

-- Dan

Daniel Weed

weed@pat.mdc.com

"My comments are my own, not my employer's"

Date: Thu, 5 Aug 1993 11:49:05 GMT

From: seas.smu.edu!vivaldi!rsd0!rsd.dl.nec.com!dave@uunet.uu.net
Subject: Newbie Scanner Antenna Questions
To: ham-ant@ucsd.edu

In article <23p87e\$4ga@agate.berkeley.edu>, michaelduclink.berkeley.edu ((Mikey Likes It) S. Dahl) writes:

 $| \rangle$

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|> The only off-the-shelf discone that goes 30-1300MHz is the Diamond D130J,  
|> which is apparently being discontinued.  The cheapest I found it for was ~  
|> $76.95 at National Tower Co. (I don't have their #, but 800-555-1212 should,  
|> and they advertise in QST.).
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|> They said that they had a few left as of Monday, 8/2)... What seems
|> to distinguish the Diamond disccone from all the others I've seen is a vertical
|> element, on-axis, attached to the top of the disc--presumably this gives the
|> antenna the extended low-end? And, a disccone will give a good enough match
|> on all the amateur frequencies that it covers to allow acceptable xmit as well.
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| >

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|> If someone has/knows of plans for a discone that has the bandwidth of the
|> Diamond D130J, I'd like to know about it--please.
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|> (just my \$00.02...)

Grove and Universal catalogs both have discones with the vertical element for extended response down to 30 MHz. (~\$80)

Radio Shack sells a good one to which the vertical can be added. (~\$60)

 $| \rangle$

|> >What cable to use - I've heard

|> >RG-6/U is a good lower cost substitute for RG-8. What about RG-58?

[illegible]

Use RG-8X. Low loss. Easy to work with (~ same diameter as RG-58; no need for F connectors). Cheaper than RG-8. I use marine grade RG-8X since the summers destroy the rubber (or plastic?) coating on coax down here in Texas.

Dave Rogers
M & R Software, Inc.
Internet: dave@rsd.dl.nec.com
On contract to: NEC America, Radio Software Dept

If you can't see the sky from where you work it's time to change jobs.

Date: Thu, 5 Aug 1993 12:30:00 GMT

From: ogicse!hp-cv!sdd.hp.com!cs.utexas.edu!convex!horak@network.ucsd.edu
Subject: Newbie Scanner Antenna Questions
To: ham-ant@ucsd.edu

In <23p87e\$4ga@agate.berkeley.edu> michaeld@uclink.berkeley.edu ((Mikey Likes It)
S. Dahl) writes:

>DISCONE....

>attic. The only catch was that his only goes from 144MHz to 1296MHz--not
>down to 30MHz, as both you and I need.

>If someone has/knows of plans for a discone that has the bandwidth of the
>Diamond D130J, I'd like to know about it--please.

Here's what I did with my Radio Shack Discone. I unscrewed one of the top elements and took it down to Home Depot (a hardware/home repair outlet) and looked for copper tubing. I found some that fit snugly around the element (took minor resistance to push the element into the tubing) and bought about 10 feet of the stuff. I took it home and cut it in half. I put a five foot section around two opposite ends of the discone's top elements and it made a significant difference on the low bands. The discone looks like it has a big dipole on the top now. It is horizontally polarized but that doesn't seem to be a drawback. The copper tubing bends rather easily but I have only had to straighten it out once after a really bad storm. You could use 4 foot sections for better stability. I read about the mod to put a vertical whip on the top section but I had trouble getting it to work. My solution may not be the best but it is cheap, easy and it works! I noticed no difference in the SWR on the ham bands while transmitting so I can still use the discone for 2m and 440 ham stuff.

Later,
David

Date: Thu, 5 Aug 1993 15:15:25 GMT
From: dog.ee.lbl.gov!overload.lbl.gov!agate!library.ucla.edu!ddsw1!news.kei.com!
ub!dsinc!gvls1!rossi@network.ucsd.edu
Subject: Question about Diamond X500HNA assembly
To: ham-ant@ucsd.edu

I just purchased a Diamond X500HNA. I seem to remember some talk on the net a while ago about "assembly modification" where it was recommended that something be soldered, or coated, or something to improve the lifetime, better waterproofing, minimize problems, etc.. something like that.

I don't remember the details.

This thing will be eventually going 70 feet in the air and I want to minimize chances of problems developing in a few months and having to take it down to fix something.

Also. There are 2 sets of holes for mounting the radials. One makes them stick out at 90 degrees and the other they are tilted down slightly. It is not real clear in the instructions which set to use.

=====

Pete Rossi - WA3NNA

rossi@VFL.Paramax.COM

Paramax Systems Corporation - a Unisys Company
Valley Forge Engineering Center - Paoli, Pennsylvania

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Date: 5 Aug 93 19:14:01 GMT
From: ogicse!hp-cv!sdd.hp.com!col.hp.com!news.dtc.hp.com!srngenprp!
alanb@network.ucsd.edu
Subject: Some Fundamental Antenna Questions
To: ham-ant@ucsd.edu

It's amazing the amount of antenna misinformation that gets posted on the net:

Gary Coffman (gary@ke4zv.uucp) wrote:

: In article <CB7r2B.Mpx@srngenprp.sr.hp.com> alanb@sr.hp.com (Alan Bloom) writes:

: >Gary Coffman (gary@ke4zv.uucp) wrote:

: >: ... A physically larger antenna will intercept more of the passing
: >: wavefronts than a smaller antenna, *independent of frequency*. The absolute
: >: power collection you get from a large antenna will be greater than from a
: >: small antenna, even if both have the same directional gain.
: >

: >Not true. First of all, it is possible for a physically small antenna to
: >have an aperture (capture area) much greater than its physical size.
: >If you could build a 1 meter diameter loop antenna for the 80 meter band
: >with zero loss, it would have an aperture nearly as large as a full-
: >sized 80 meter dipole (about 800 square meters).

: Of course you can't build an air core loop like that. ...

: ... But, avoiding such special cases, it remains
: generally true that the amount of signal intercepted depends on the
: size of the antenna, assuming other confounding factors like matching,
: or modifying the physical properties of the vacuum, are normalized.

What remains generally true is that a physically small antenna can have an aperture much bigger than its physical size. If you want a practical example, look at the AEA IsoLoop. A 1-meter loop that has an aperture

nearly as big as a full-sized 20 meter dipole (about 50 square meters).

I'll say it again: Any two antennas with the same gain (at the same frequency) have the same aperture.

: >Any two antennas (on the same frequency) with the same gain have the
: >same aperture, according to the equation $A = \lambda^2 G / (4 \pi)$, where
: >A is the aperture, λ is the wavelength and G is the gain.

: Note that the above formula is often used to show that path loss
: increases with the square of frequency, but that's not really true.
: There aren't greater physical losses over the path, just smaller
: apertures for the physically smaller antennas of the same gain to
: catch the wavefronts.

The definition of path loss assumes isotropic antennas, which causes loss to increase with frequency (decrease with wavelength). The formula is:
Path loss = $(4 \pi R / \lambda)^2$ where R is the distance between antennas, and λ is the wavelength.

: If the antennas are kept the same physical
: size, the "path" loss magically becomes the same.

Actually, if both transmitting and receiving antennas have constant aperture, the loss DECREASES with frequency. The " λ " in the path loss equation moves to the numerator instead of the denominator.

For constant antenna TYPE (dipole, 3-el beam, etc), you get less loss with LOWER frequencies. For constant antenna APERTURE, you get less loss with HIGHER frequencies.

: ... Some antennas with very sharp patterns
: still aren't very good antennas because they don't capture
: very much signal. An example might be a three "tower" array
: of stubby duckies compared to a 1/4 wave telescoping vertical.
: The duckie array could have directional gain greater than the
: 1/4 wave, but still show lower absolute signal strength. I'm
: saying the little antennas don't intercept as much of the
: impinging wavefronts.

But if the 3 phased duckies have gain over the 1/4-wave vertical, then they will indeed show a greater received signal strength than the 1/4-wave antenna, assuming the desired signal is coming from the preferred direction.

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End of Ham-Ant Digest V93 #3
